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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,034	09/29/2005	Hirofumi Kikkawa	KAWZ 200113	5564
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FAY SHARPE LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			EXAMINER MILLER, SAMANTHA A	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,034

Applicant(s)

KIKKAWA ET AL.

Examiner

SAMANTHA A. MILLER

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Receipt of applicant's amendment filed on 12/21/2007 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over YONEDA (US 4,614,645) in view of MONRO (US 5,044,424).

YONEDA teaches in the specification and Figs. 1-2 an invention in the same field of endeavor as applicant's invention that is described in the applicant's claims.

YONEDA teaches:

I. An air preheater (27, heats exhaust smoke from boiler) for heating combustion air by exhaust smoke (2) discharged from a boiler (1), a heat recoverer (33) for heating heat medium by exhaust smoke (5) discharged from the air preheater, a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the heat recoverer (dust collected from the exhaust gas is introduced through line 37) (Fig.2) (col.2 ll.25-29 and col.5 ll.52-53), a wet-type exhaust smoke processing apparatus (6, 8) for wet-type processing exhaust smoke discharged from the dust collector (3) (through line 37) (Fig.2) (col.5 ll.52-53), a reheater (col.4 ll.23-27, the recoverer (33) acts as a reheater (28) and recoverer (33) process of prior art) for heating exhaust smoke (9) discharged

from the wet-type exhaust smoke processing apparatus by the heat medium (col.4 ll.33-51), and a heat medium circulation pipe passage (9) for circulating the heat medium between the reheater and the heat recoverer (col.4 ll.33-51) (Fig.2), wherein the heat medium circulation pipe passage is provided with temperature control means (col.6 l.28-col.7 l.51, comparative data in which the temperature was measured and controlled) which measures a heavy metal concentration in exhaust smoke discharged from any one or more of the dust collector, the wet-type exhaust smoke processing apparatus and the reheater, and adjust the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration falls within a predetermined range (Tables 1-4) (col.8 ll.54-64).

2. The temperature control means is any one of or more of means for adjusting a heat medium circulation flow rate of the heat medium circulating between the reheater and the heat recoverer, means for cooling the heat medium means for heating the heat medium, and means which disposes a bypass pipe (connecting 33 to 6 to 25 to 27f, Fig.2) for connecting an inlet and an outlet of a passage of the heat medium flowing into the heat recoverer and which adjust a flow rate of the heat medium in the bypass pipe (col.6 l.28-col.7 l.51, comparative data in which the temperature and flow rate was measured and controlled).

3. A boiler (1), a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the air preheater (27), and a wet-type exhaust smoke processing apparatus (6, 8) for wet-type processing exhaust smoke discharged from the dust collector (through line 37) (Fig.2) (col.5 ll.52-53), wherein the system further comprises

control means which measures a heavy metal concentration in exhaust smoke discharged from the wet-type exhaust smoke processing apparatus (Tables 1-4), and which adjusts any one or more of pH of liquid absorbent of the wet-type exhaust smoke processing apparatus (col.7 ll.12-25), a flow rate of oxidizing-air (from 16 fed though 23 to 25, col.6 ll.45-48), and a flow rate of waste water, such that the heavy metal concentration falls within a predetermined range (col.8 ll.40-64).

4. An air preheater (27) for heating combustion air by exhaust smoke discharged from a boiler (1), a heat recoverer (33) for heating a heat medium by exhaust smoke discharged from the air preheater, a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the heat recoverer (through line 37) (Fig.2) (col.5 ll.52-53), a wet-type exhaust smoke processing apparatus for wet-type processing exhaust smoke discharged from the dust collector (through line 37) (Fig.2) (col.5 ll.52-53), a reheater (col.4 ll.23-27, the recoverer (33) acts as a reheater (28) and recoverer (33) process of prior art) for heating exhaust smoke discharged from the wet-type exhaust smoke processing apparatus by the heat medium (Fig.2), and a heat medium circulation pipe (9) passage for circulating the heat medium between the reheater and the heat recoverer, wherein the system further comprises control means which measures a heavy metal concentration (Tables 1-4) in exhaust smoke discharged from the dust collector, and adjusts the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration (Tables 1-4 teaches finding concentrations of metals) falls within a predetermined range (col.8 ll.40-64), and which also measures the heavy metal concentration in exhaust smoke discharged from the

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wet-type exhaust smoke processing apparatus (Tables 1-4), and adjusts any one or more of pH of liquid absorbent of the wet-type exhaust smoke processing apparatus (col.7 ll.12-25), a flow rate of oxidizing-air (col.6 ll.45-48), and a flow rate of waste water, such that the heavy metal concentration falls within a predetermined range (col.8 ll.40-64).

5. The temperature control means (maintaining the temperature of the system to a predetermined temperature, col.6 ll.6-10) includes a measuring apparatus (39, of the heat recovery part of the system, col.4 ll.14-32) that measures the heavy metal concentration (which is inherently in the suspended matter, Table 1-4) in exhaust smoke at an inlet (at 33 the gas-gas heat is the other part of the system that the predetermined temperature is kept, col.4 ll.14-32) of a smokestack.

YONEDA teaches the invention as discussed above. However, YONEDA does not teach a preheater that has gas-gas heat exchange with gas going back into the boiler.

Referring to claims 1-5, MONRO teaches a preheater (22) that uses gas (18) going out of the boiler (12) to heat the clean gas (16) that enters boiler (12) (Fig.1) (col.5 ll.10-26).

Therefore, it would have been obvious to a person having ordinary skills in the art at the time the invention was made to have modified the exhaust smoke processing system of YONEDA in view of the teaching of MONRO in order to for improving the

efficiency of such heat generators and for better utilization of heat produced in the thermal section (col.1 ll.22-26)

Response to Arguments

Applicant's arguments filed 12/21/2007 have been fully considered but they are not persuasive.

Applicant contends that YONEDA does not teach the use of a heat medium circulation pipe passage. However, claims are afforded their broadest reasonable interpretation.

In this instant application, claim 1 merely requires a heat medium circulation pipe passage for circulating the heat medium between the reheater and the heat recoverer. In this case, the heat medium circulation pipe (9) contains a heat medium of clean exhaust gas which causes a heat exchange in (33) (col.4 ll.33-51) (Fig.2).

Applicant contends that YONEDA does not teach an element that controls heavy metal emission. However, claims are afforded their broadest reasonable interpretation.

In this instant application, claim 1 merely requires wherein the heat medium circulation pipe passage is provided with temperature control means which measures a heavy metal concentration in exhaust smoke discharged from any one or more of the dust collector, the wet-type exhaust smoke processing apparatus and the reheater, and adjust the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration falls within a predetermined range. As applicant has pointed out YONEDA teaches measuring a concentration of suspended material (by

concentration detector 39, col.5 ll.34-47 talks of detecting the Cl present, however col.5 ll.62-68 discusses the example with Cl could also be used for F or the suspended material instead) in an effluent (in 13) of a wet exhaust treating device (Fig.2). The suspended material inherently contains heavy metal from the information given in Table 1-4, particularly Table 3 which lists the properties of the filtrate (37) which is disposed of from the exhaust smoke discharge. Table 3 shows the concentration of liquid or dissolved materials (Cl, Mg, SO, and Ca) and the percentage of materials that did not dissolve completely in the liquid solute (or the suspended matter), however the suspended matter inherently will contain matter from each of the materials listed including Mg a known heavy metal. Evidence of suspended matter being made from or in accordance with heavy metal is provided the references US 3,772,192; US 4,241,953; US 4,615,808; US 5,322,629; US 5,324,499; and US 6,216,967. As stated through out YONEDA the exhaust is introduced into a dry dust collector where a dust is removed and the exhaust is guided to the wet exhaust gas treating device where the exhaust is cleaned and results with the effluent discharge (col.3 ll.26-39). The effluent or exhaust discharge contains a small of the suspended material (between 1-5 %wt) that is to be maintained at a constant level, if the concentration is too high (col.5 ll.34-68) it will be adjusted or decreased (col.6 ll.22-24)

Applicant contends that YONEDA teaches away because it is impossible to decrease the heavy metal concentration in exhaust gas discharged from a smoke stack. In this case, YONEDA teaches the decrease of the heavy metal concentration as discussed above.

Applicant contends that YONEDA does not teach temperature adjustment means. However, claims are afforded their broadest reasonable interpretation.

In this instant application, claims 1-5 merely require the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration falls within a predetermined range. The temperature of exhaust smoke (to a predetermined temperature, col.6 ll.4-10) at an outlet of the heat recoverer (33) such that the heavy metal concentration falls within a predetermined range (1-5 %wt) since the concentration of heavy metal delegates less clogging which enables less effluent to be used and this causes the temperature of the gas to be discharged at the smokestack to be maintained at a constant predetermined temperature (col.4 ll.14-32).

With respect to Applicant's arguments that the combination of MONRO with YONEDA is an invalid reason, hindsight reasoning, and is entirely conclusory; Applicant is respectfully urged to see MONRO column 1, lines 22-26, explicitly stating for improving the efficiency of such heat generators and for better utilization of heat produced in the thermal section.

Applicant contends that YONEDA does not teach adjusting the pH of liquid absorbent of the wet-type exhaust smoke processing apparatus such that the heavy metal concentration in the exhaust gas falls within a predetermined range. However, claims are afforded their broadest reasonable interpretation.

In this instant application, claims 1-5 are shown in YONEDA (col.7 ll.12-33, col.8 ll.11-24, and col.5 ll.34-68) which describes keeping the concentration of the heavy metals in a predetermined range of 1-5 %wt, the adjusting of the pH level is used in the

neutralization tank (25) to help neutralize the effluent to a concentration in the range so the flow is not inhibited and the temperature can then fall to the predetermined temperature.

Any other of Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection or addressed in the response above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR '1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samantha A. Miller whose telephone number is 571-272 9967. The examiner can normally be reached on Monday - Thursday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Samantha Miller/
Examiner
Art Unit 3749
3/08/2008

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749